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A BRAVE NEW SERVICE WORLD? AN ANALYSIS OF THE SERVICES SECTOR THROUGH THE LENSES OF SERVICE SCIENCE

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Abstract

The services sector is subject to a continuous transformation process and to technological changes and innovations; in the last few years the emergent Service Science Management and Engineering (SSME) discipline did several attempts in developing theories and explaining the service industry's phenomena. The present paper, which is theoretically grounded in the Work Systems Theory, aims at describing the ongoing situation of Service Science applications in specific services industries. We hereby present a study, conducted on 24 academic papers that deal with different applications belonging to the Service Science domain, that provides a classification of each application according to: which part of the Service Science domain it involves, which specific industrial sector it belongs to and finally on which operational level, of a company's organizational structure, it can be positioned. Although this study cannot describe the whole services sector and all its trends and characteristics, it provides an emblematic description of what the Service Science Management and Engineering discipline means in different industrial fields and which are the main trends and issues related to some specific industrial sectors.

Keywords: Service Science, Services Sector, Work Systems Theory, Service Systems

1 INTRODUCTION

Given the facts that: (1) in the most developed countries such as US or European countries about 75% of the economy is in the services sector (Larson, 2008) and (2) Service Science Management and Engineering (SSME) is being globally recognized as the discipline which studies the *service systems* and their evolution and interactions (Maglio and Spohrer, 2008), the contribution of this paper is in the direction of describing which kind of topics and disciplines in the broad domain of Service Science are actually applied in the services sector and what is the role of the Information Systems discipline within these applications.

The structure of the global economy is changing: the services sector is continuously growing and expanding (Hidaka 2006, Glushko 2008). Meanwhile, also the manufacturing sector is undergoing a radical change, the so called “servitization”: a great number of companies are moving their competitive focus to the development and delivery of services, on top of their traditional phisycal goods (Neely, 2007). The principles of the Service Dominant Logic (Vargo and Lusch 2006) are being applied in many industrial sectors thus transforming the global economy and – in particular - the services industries.

The word *service* can be defined in several ways and the literature is rich in definitions of this concept. In this paper we will adopt a quite recent definition that is suitable to cover a wide range of *services* and is the result of a deep analysis and discussion: “*Service is the application of competences (knowledge, skills and resources) by one entity for the benefit of another entity in a non-coercive (mutually agreed and mutually beneficial) manner*” (IfM and IBM 2008). A second, essential, definition is the one of service system: “... *a dynamic value co-creation configuration of resources, including people, organizations, shared information (language, laws, measures, methods), and technology, all connected internally and externally to other service systems by value propositions.*” (Spohrer et al. 2008). Finally, Service Science is “*the discipline that studies the interaction and evolution between service systems, that takes place through services, exchanged in order to create value*” (Maglio and Spohrer 2008).

Matching the three definitions highlights the relationship between Service Science and the services industry. Taking for example the banking sector, each banking company can be seen as a service system that delivers and receives services to and from other service systems (also belonging to different sectors) or to the final customers.

The domain of Service Science is very broad and recently many attempts have been made in proposing frameworks and theories that aim to map the domain of the discipline, define its boundaries and its relationships with other disciplines such as computer science, information systems, business and social sciences. In this paper we use the opposite approach: we observe the services sector through the lens of the Service Science. The present research is therefore a *descriptive* study, whose purpose is to describe the services sector and the implications of **for the Information Systems discipline.**

The rest of the paper is structured as follows: in the next paragraph we present the conceptual foundations and the theoretical background of our study, i.e. the domain of Service Science and the characteristics of the services sector. Then we propose and describe the classification criteria for the analysis of the services sector. Subsequently we introduce the classification and analysis of 24 academic papers discussing the application of Service Science concepts within companies belonging to the services industry and finally we formulate and discuss the outcomes of this analysis. The final paragraph describes limitations and future developments of the present research.

2 THEORETICAL BACKGROUND

The present research belongs to the stream of studies about *service systems*. The starting point of this paper is the *Work Systems Framework* that provides a clear picture and a structured way for thinking of systems as service systems. A work system is a system in which human participants and/or

machines perform work using information, technology and other resources to produce products and/or services for internal or external customers. A Service System is a work system that produces services for customer and every work system that produces products and services for people other than system participants is a service system (Alter, 2010).

2.1 The Service Domain Framework

Service Science is not limited to the study of service systems as work systems but includes many different research areas that are described in detail in a framework called Service domain framework (SDF). SDF has been recently proposed by Alter (2009) with the objective of mapping the entire Service Science domain (Figure 1).

One of the noteworthy implications of this framework is that it allows positioning all the sub-disciplines involved in Service Science, and – specifically – the Information System discipline through the Service Science lens. An information system can be seen as a work system whose processes and activities are devoted to processing information, thus the IS discipline is associated with two of the branches identified by the SDF (Alter 2009):

- *services as computerized tools*, that is focused on the issues related to the relationship with a user and a whatever IT artifact, without considering the business situation and the work system whose they belong to;
- *application software suites*, that deals with users and IT composite application that support a part of an enterprises (seen as a work system) and of its processes or functions.

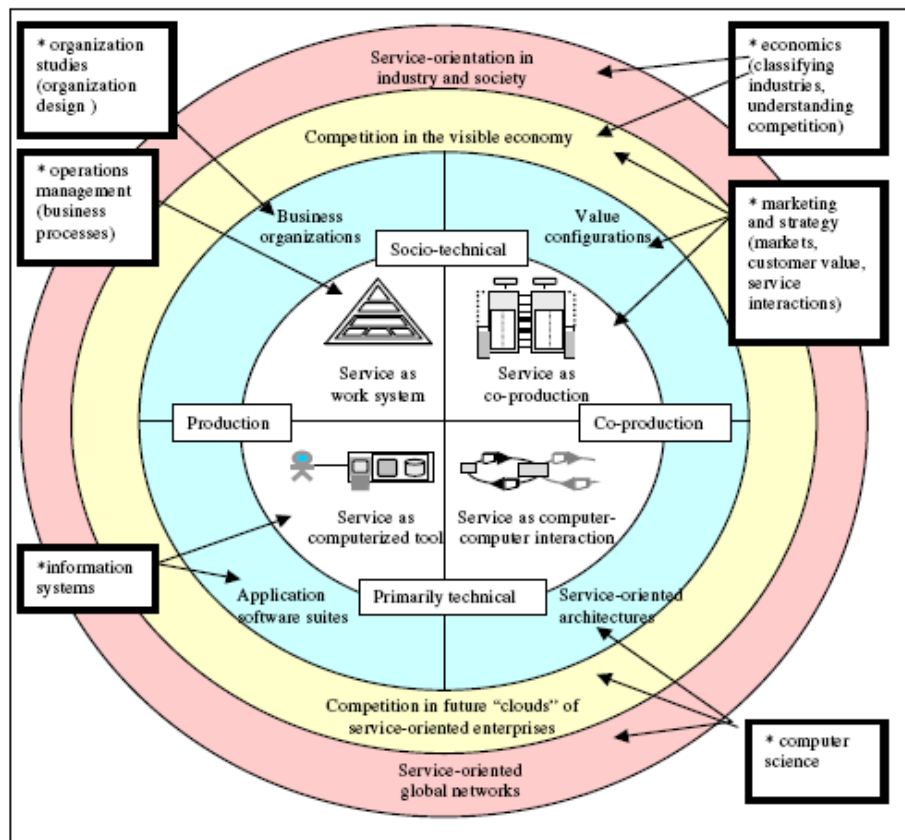


Figure 1: the SDF and the disciplines associated with its specific areas (S. Alter, 2009)

2.2 The classification criteria

As anticipated in the introduction, this paper presents a review study, where a set of selected papers were classified with the aim to achieve a better understanding of the services industry. Three criteria

for the classification of the papers were identified: 1) the SDF, 2) the organizational levels and 3) the services specific industry they belong to.

The SDF (described in Alter 2008, Alter 2009, Alter 2010), proposes an accurate and unambiguous classification of the domain of Service Science, thus it represented the natural first classification criteria of our study. A great advantage of the SDF is that through its application we've been immediately able to identify whether the topic of a paper fell under the domain of Service Science or not. Secondly, one must note that in many of the reviewed papers the impact and influence of the application was in a different area rather than in the area where the application was developed and implemented. Therefore we differentiated the classification of the area of the application itself and of the area of its impact, in order to highlight the synergies within the Service Science domain and between the different areas. For example, one of the analyzed papers deals proposes a new methodology for the implementation of a Service Oriented Architecture and describes the effects of this implementation in the benefits of the interaction of the user with the new implemented software. We classified the action area of the SDF for this paper as "*service as computer-computer interaction*", and the impact area as "*service as computerized tool*".

In order to give a further characterization to the applications we analyzed, we introduced another classification criterion: the company's organizational level on which the application described in the paper has its impact. In doing this we relied on Anthony's classification scheme for managerial activities (Anthony 1965). The Anthony's pyramid distinguishes three levels: 1) *Strategic planning*, that involves all the processes of deciding on objectives of the organization and on the resources used to attain these objectives; 2) *Management control*, that involves all the processes by which managers assure that resources are obtained and used effectively and efficiently in the accomplishment of the organization's objectives; 3) *Operational control*, that includes all the processes of assuring that specific tasks are carried out effectively and efficiently.

In our analysis we positioned each paper according to the organizational level it deals with, detailing also whether the paper focuses more on the description of the specific application or on the implications of the application on some parts of one or more organizations. This "enrichment" of the SDF allowed us to add a criterion to our classification and investigate the possible relationships between the areas described in the service domain and the three organizational levels.

As a third criterion we adopted the "*International Standard Industrial Classification of All Economic Activities*" (ISIC). This classification has been officially released in 2008 by the "United Nations Statistics Division" (the version we used, ISIC rev.4, for further information please refer to <http://unstats.un.org/unsd/cr/registry/regcst.asp?Cl=17>) and nowadays represents the worldwide point of reference in classifying industrial sectors. The classification defines some macro-sectors belonging to the services sector, such as Education, Financial and Insurance activities, Public Administration and Defence and many others. Each macro-sector is identified by a letter, then sub-divided in other specific sectors (identified by a number).

3 THE CLASSIFICATION AND ITS RESULTS

3.1 The classification process

The core part of the present study was the classification and analysis of 24 academic papers related to Service Science and the services industry. The study, that will be expanded in the future, takes in consideration a small number of papers, which however appears sufficient to elaborate conclusions on some specific services sectors and highlight some areas of interest for Service Science, studied and applied in some industrial fields.

The most of the papers analyzed belong either to Service Science related Journals or to AIS conferences. At this stage, we limited our analysis to 24 papers. Initially we had reviewed about 200 papers related to Service Science topics, and then we selected them according to the following principles: (1) we avoided analyzing two or more papers dealing with very similar topics within the same industry, (2) we excluded papers dealing with topics firmly contained in the SDF (and not just

partially), (3) we decided not to limit our analysis to a few specific services sector, but we included the most of them, and (4) we kept constant the ratio between the number of papers analyzed related to an industry and the total number of papers inherent to that industry we had identified in the initial review.

The process of evaluation and classification of each application contained in the papers towards the three criteria was very challenging and required great effort. In order to prove that this process has not been ambiguous and arbitrary we wrote for each article the reasons that led us to include it in some specific areas of the SDF and operational levels (for reasons of available space we cannot report in this paper the details of the classification process and the motivations associated with the classification of each paper, such documentation is available under request to the authors). In the following table we report title and author of the article (the full reference is at the end of the paper) and the classification according to the three criteria.

Title and Author	Service domain area	Org. level	Industrial sector
Consumer Acceptance of Technology Contact: Extending Web-Based eCommerce to Technology-Based Services (Pramatari, K. et Al.)	Action area: "value configurations" Impact area: "service co-production"	operative	Wholesale and retail trade
iFAO: Facility Network Transformation Services for Specific Customer Oriented Service Industries (Dong, J. et Al.)	Action area: "service as computer-computer interaction" Impact area: "service as computerized tool" and "service as computer-computer interaction"	strategic	Wholesale and retail trade
Towards a Semantic Data Quality Management - Using Ontologies to Assess Master Data Quality in Retailing (Becker, J. et Al.)	Action area: "service as computer-computer interaction" Impact area "service as computer-computer interaction"	Operative	Wholesale and retail trade
A Study of the Website Performance of Travel Agencies Based on the EMICA Model (Lin, D. et Al.)	Action area "service as computerized tool" Impact area in "service as computerized tool" and "service as co-production"	Operative	Wholesale and retail trade
A Virtualization-Based Service System Development Method (Mo, T. et Al.)	Action area "service as computer-computer interaction" Impact area "service as computerized tool"	Operative	Transportation and storage
Research on Urban Logistics Infrastructure: An Empirical Study of China (Jang, C., Chen, D.)	Action area "service as co-production" Impact area "competition in the visible economy"	Operative	Transportation and storage
Evaluation and Analysis: Development Trend of China's Logistic Industry under Supply Chain Globalization Environments (Shao, J. et Al.)	Action area "service as co-production" Impact area "competition in the visible economy"	Tactical	Transportation and storage
Service System Decoupling for Mass Customization: A Case Study in Catering Services" (Chen, J., Hao, Y.)	Action area "service as work system" Impact area "business organizations"	Tactical-operative	Accommodation and food service activities
Specifying Enabling Services in Telecommunications Service Systems (Wulf, J. et Al.)	Action area "service as computer-computer interaction" Impact area "value configurations" and "competition in visible economy"	Operative	Information and communication
The IBM Telecommunications Service Delivery Platform (Ramanathan, S. et Al.)	Action area "service as computer-computer interaction" Impact area "service as work system"	Tactical-operative	Information and communication
Developing a Business Process Modeling Language for the Banking Sector – A Design Science Approach" (Becker, J. et Al.)	Action area "service as computer-computer interaction" Impact area "service as computerized tool"	Operative	Financial and insurance activities
Validating Indirect Human Costs MEFM Taxonomy: Case Studies from the Banking Sector (Mohamed, S., Irani, Z.)	Action area "service as work system" Impact area "service as work system"	Tactical-operative	Financial and insurance activities
Assessing Strategic Alignment to Improve IT Effectiveness (Smits, M. et Al.)	Action area "service as work system" Impact area "service as work system"	Strategic	Financial and insurance activities
A Comprehensive Information Technology Risk Assessment Audit Framework for Small- and Medium-Sized Financial Institutions (Lovaas, P., Strefl, K.)	Action area "service as computerized tool" Impact area "service as work system"	Tactical	Financial and insurance activities
Business-IS Alignment: Assessment Process to Align IT Projects With Business Strategy (Gutierrez, A. et Al.)	Action area "service as computerized tool" Impact area "service as work system"	Operative-tactical-strategic	Professional, scientific and technical activities
Problem solving within professional services: evidence from the medical field (Jaakkola, E., Halinen, A.)	Action area "service as co-production" Impact "service as co-production"	Operative	Professional, scientific and technical activities
Business Process Model-Based Evaluation of ICT Investments in Public Administrations (Becker, J. et Al.)	Action area "service as computerized tool" Impact area "service as a work system"	Tactical	Public administration and defence
Business Process Assessment and Evaluation in Public Administrations using Activity Based Costing (Becker, J. et Al.)	Action area "service as computerized tool" Impact area "service as work system"	Tactical	Public administration and defence
Cross-organizational processes in Public Administrations: Conceptual modeling and implementation with Web Service Protocols (Ziemann, J. et Al.)	Action area "service as computerized tool" Impact area "service as co-production"	Operative	Public administration and defence
Value Assessment of Business-to-Government Innovations: a Case Study (Raus, M.)	Action area "service as computerized tool" Impact area "service as work system"	Tactical	Public administration and defence
To Wiki or to Blog: Piloting Social Software Technologies for Assessment in a Large First Year Information Systems Class (Lubna Alam, S.)	Action area "service as computerized tool" Impact area "service as work system"	Operative	Education
Emotional Responses to Computer-Based Training Materials in Education (Chinn, S.J. et Al.)	Action area "service as computerized tool" Impact area "service as work system"	Operative	Education
Information and Communication Technology Assessment Benchmark (Troboy, L. et Al.)	Action area "service as computerized tool" Impact area "service as work system"	Operative	Education
Using Survey Data to Design a RFID Centric Service System for Hospitals (Mogre, R. et Al.)	Action area "service as computerized tool" Impact area "service as work system"	Tactical	Human health and social work activities

Table 1. Classification of the papers

3.2 Results

Not all the industrial sectors belonging to the services sector were considered. In some sectors (e.g. "arts, entertainment and recreation", "real estate activities" and "electricity, gas, steam and air conditioning supply") we were not able to find any paper dealing with some topic inherent to Service Science. In some other sectors (e.g. "wholesale and retail trade", "public administration and defence"

and “financial and insurance activities”) we found plenty of papers proposing possible applications of Service Science, but - according to the selection principles explained above - we limited their number to four out of the twenty-four analysed.

By positioning each paper in the SDF and identifying both the area in which the content of the paper applies (the so called “action area”) and the area in which the application described has its influence (the so called “impact area”) we were able to draw a picture of which are the more frequent synergies that take place within different areas of the Service Science domain. Figure 2 illustrates the synergies, each number stands for the number of papers with the same synergy.

An interesting result is that 9 papers of 24 describe applications that act in the area of “service as computerized tools” and which have their impact in the area of “service as work system”. This indicates that a good number of Service Science articles deal with topic that are familiar to the Information Systems discipline, because the area “service ad computerized tool” contains those paper which describe the interaction between a user and a software or more generally an IT artefact. Even more interesting is that for all these 9 papers the application described is not limited just to the human-computer interaction, but influences the whole structure of the work system, (which is usually a company, belonging to different specific services sector). The topics of the most of these 9 papers deal with business process modelling or with the general theme of business and IT alignment.

This result led us to two considerations. Firstly, the Information Systems discipline appears strictly related in the Service Science discipline and brings its benefits on the whole structure of a work system, (but apparently not on a network of work systems or supply chain). This does not mean that there is a complete overlap between the Information System discipline and Service Science (on the contrary, we found many papers dealing with IS topics that could not be included in the SDF), nevertheless we verified there is a significant intersection between the two disciplines limitedly to some consistent and relevant topics and applications. Secondly, the SDF proved to be a correct and coherent choice for our study, as the most of these 9 papers has been presented at AIS conferences.

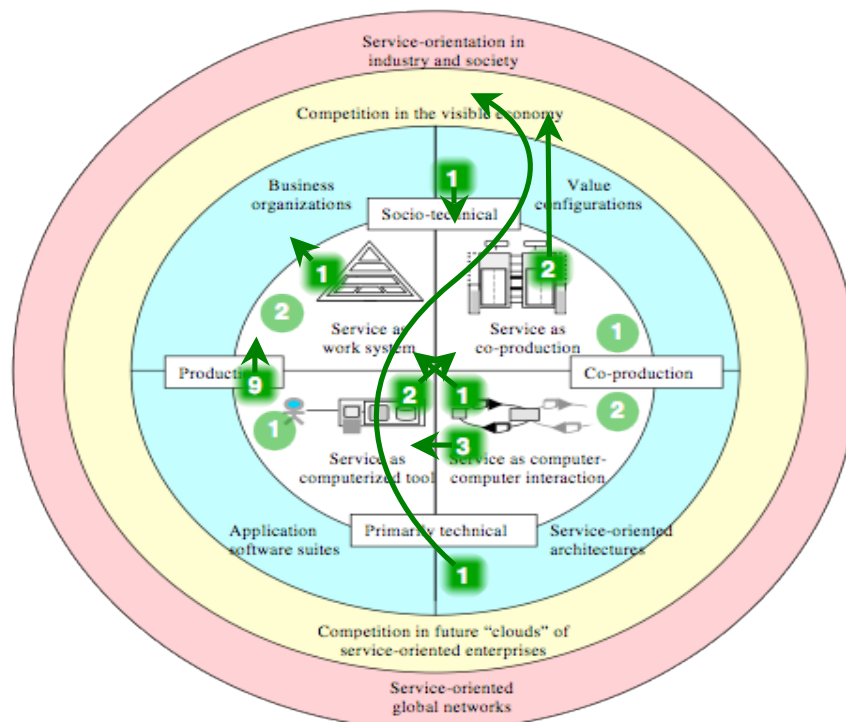


Figure 2. The SDF synergies

As far as Anthony’s operational levels are concerned, the majority of the content of the papers falls under the operational control category, with a good number in the management control category and just a few dealing with strategic planning activities. This result seems to indicate that Service Science

is a discipline which deals with few applications that support strategic activities while its focus is on the tactical and operational levels.

4 A NEW SERVICE INDUSTRY?

Another result of our review and analysis is that we've been able to highlight some trends and applications within a relevant subset of sectors of the services industries.

4.1 The outcomes through the lenses of the industry segments

- **Wholesale and retail trade:** In this sector we've been able to identify a great number of Service Science related papers, however these papers were dealing with significantly diverse topics and we have not been able to recognize a general trend or identify a specific area of the service domain that is predominant. Our results indicate the presence of applications that aim to improve the processes of value co-creation and the interaction between service systems; moreover we discovered a good number of applications with the aim of developing IT services and improve internal performances. From an organizational point of view the most of these applications are targeted to the operational activities as they want to improve a collection of specific tasks that are different one from the other.
- **Transportation and storage:** the study revealed in this sector (similarly to the previous one) several Service Science applications. Most of them are directed to improving the interactions between service systems and so the value co-creation, in order to improve the performance of these work systems in the global market and economy. The applications mainly impact the operational level (similarly to the previous sector).
- **Accommodation and food service activities:** In this sector we've been able to find just one paper, thus suggesting that this industry is not very influenced by Service Science applications. The paper deals with business process modeling, and the application is directed to improve the performance of the service system.
- **Information and communication:** the examined papers related with this sector are particularly misleading. It is worth noting that we took in consideration just those papers describing applications specifically designed for companies belonging to this industry. Several of the reviewed papers deal with the technological content of the application, thus they were not taken into account. Therefore only a limited number of papers are focused on this sector and all of them deal with technical topics belonging to the "service as computer-computer interaction" and positioned at an operational level (such as SOA or IT platforms implementations) that bring diverse benefits to the service system analyzed.
- **Financial and insurance activities:** This sector contains a good quantity of Service Science related papers and many of them focus on the topic of business – IT alignment, thus falling under the Information Systems domain. A typical application is the improvement of the performance and innovation of a Service System through process re-engineering and through the study of the interaction between a user and the IT that supports some specific processes. Differently from the sectors previously listed, the applications analyzed impact all the three organizational levels: a good number of tactical applications designed to help managers in the efficient use of the resources in order to meet objectives.
- **Professional, scientific and technical services:** This category is very wide and actually contains companies operating in different fields, such as, among others, legal and accounting activities, scientific research and development, architectural and engineering activities. We've been able to find a small number of articles belonging to this industry (that is in reality a "patchwork" of industries) dealing with diverse topics, such as the alignment between Information Systems and business or the problem solving within professional services, surprisingly all of the articles where dealing with meeting company's objectives and not directed in improving specific activities and so positioned at a strategic and tactical level.
- **Public administration and defense:** surprisingly, this sector contains a high number of very similar applications, based on the study of the relationships between users and IT services, in order

to redesign business processes and improve the performance of a Service System. Applications in this sector are equally distributed between those that aim at improving the efficiency of single activities (impact on the operational level) and the aim of manage activities and processes in order to reach the objective of the service systems (impact on the tactical level).

- **Education:** this sector, similarly to the previous one (although present in a fewer number of papers) highlights a trend towards the study of the relationships with user and final customer of the service delivered and the IT applications which deliver the service; all the application analyzed in this sector have an operative target.
- **Human health and social work activities:** In this industry we've been able to find just a couple of papers dealing with Service Science subjects studying the relationship between user and IT in order to improve the performance of a Service Systems and reach company's objectives (tactical level).

4.2 The outcomes through the lenses of the operational levels

As far as the operational levels are concerned, we hereby clarify and provide some examples of what is the content of the papers analyzed in each of the level of Anthony's pyramid:

- **Operational control:** at the operational control (or operative) level the most of the papers and the industry dynamics analyzed regard the development of new IT services or IT platforms and architectures especially through innovative methodologies and techniques. These new services developed will have their impact on processes automation and optimization and on the improvement of the performance of the Service System. A topic of interest of several papers has been the study of the relationships between the new IT services development and the user which will benefit of them. Figure 3 shows the distribution of the papers analyzed belonging the operational control level in the SDF.

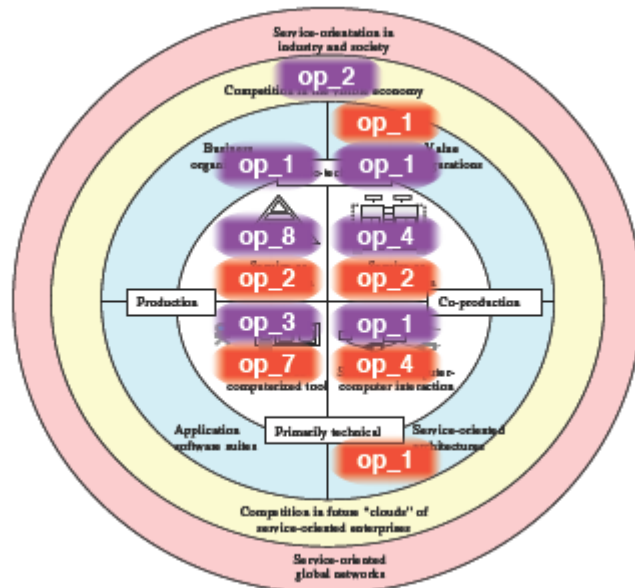


Figure 3. Distribution on the SDF of the papers at an operational control level

- **Management control:** In more than one paper, the application presented can be positioned at a typical operational level but the corresponding benefits are mainly at a management control level. For this reason some papers are “borderline”, others have been included in the operational control level just because their main focus was in the description of the application rather than in the description of its results. So at a management control (or tactical level), many articles deal with the same subjects described for the operational level, seen from a different perspective. In other words, papers at this level focus their attention on the decisional implications of the new services development for managers rather than on the process of development itself; moreover a few

number of papers, especially in the wholesale and retail and in the transportation sector deal with some application that aims to improve the transaction and the relationships between service systems.

- **Strategic planning:** The strategic planning level is the one that, according to our study, is apparently less affected by Service Science topics. The few applications analyzed at this level deal with the business-IT and IS alignment from a high level point of view and their contribution is directed towards the definition of strategic objectives that are adequately supported by an IT infrastructure and by the structure of the whole service system.

5 CONCLUSIONS, LIMITATIONS AND FUTURE WORKS

This descriptive study had the purpose to explore and investigate on a very wide topic and answer to the question what Service Science means in the services sector?

After the selection and detailed analysis of 24 out of about 200 Service Science related papers we have been able to classify the main Service Science applications within different specific industries belonging to the services sector. The main contribution of the present study has been in the identification of which kind of phenomena and dynamics included in the domain of Service Science are typical of each specific services sector and in the description of what these phenomena consist. The choice of limiting the analysis to the three criteria allowed us to investigate the relationships between them and arrive to conclusions on what is happening in some specific service industries, considering the Service Science area and operational level the content of the papers involves.

This paper can be a starting point for future research with explanatory or predictive goals about some of these specific phenomena or about the evolution of the Service Science discipline in a specific industry. From a pragmatic point of view our study described some of the Services sector through the Service Science lens and can be helpful also to practitioners that want to have a different perspective about what is happening in their field. Moreover, in the existent literature, Service Science has always been considered as a broad and theoretical topic and this study attempts to clarify and explain the link between this discipline and the services sector.

However we are also aware of the following limitations of this paper.

First of all the literature review needs to be expanded, as, even if we took in consideration a consistent number of abstracts we performed a deep analysis on just a subset of them, secondly we obtained different results in different specific industries: if some of them seem to have clear trends and many Service Science applications, other are less discussed in literature or contain a range of Service Science applications very different one from the other, finally we need to investigate more in the relationships between Service Science and other disciplines different from IS, in order to analyze which business, social sciences or computer science applications and areas of research fall completely in the Service Science domain and how the Services sector is influenced by them.

So our future efforts will be in directed in expanding our review and analysis to other Service Science related paper, especially taken from business and computer science conferences and journals in order to confirm and enrich the results that we've been able to achieve for each industry during this research and subsequently to examine in detail one or more Service Science phenomena or one or more specific industry and develop a explanatory or prescriptive study on it.

6 REFERENCES

- Alter, S. (2008). Seeking synergies between four views of service in the IS field. In Proceedings of the Fourteenth Americas Conference on Information Systems, Toronto, ON, Canada August 14th-17th 2008
- Alter, S. (2009). Mapping the domain of Service Science. Proceedings of the Fifteenth Americas Conference on Information Systems, San Francisco, California August 6th-9th 2009

- Alter, S. (2010). Viewing systems as services: a fresh approach in the IS field. *Communications of the association for information systems*, Vol. 26, article 11
- Anthony, R.N. (1965). *Planning and control systems: a framework for analysis*. Boston: Harvard business school division of research press
- Becker, J., Bergener, P., Räckers, M. (2009). Business Process Assessment and Evaluation in Public Administrations using Activity-Based Costing. *Proceedings of the Fifteenth Americas Conference on Information Systems*, San Francisco, California August 6th-9th 2009
- Becker J., Bergener, P., Kleist S., Pfeifer D., Räckers, M. (2008). Business Process Model-based Evaluation of ICT Investments in Public Administrations. In *Proceedings of the Fourteenth Americas Conference on Information Systems*, Toronto, ON, Canada August 14th-17th 2008.
- Becker, J., Matzner, M., Mueller, O., Winkelmann, A. (2008). Towards a Semantic Data Quality Management - Using Ontologies to Assess Master Data Quality in Retailing. In *Proceedings of the Fourteenth Americas Conference on Information Systems*, Toronto, ON, Canada August 14th-17th 2008
- Becker, J., Weiss, B., Winkelman, A. (2009). Developing a Business Process Modeling Language for the Banking Sector – A Design Science Approach. *Proceedings of the Fifteenth Americas Conference on Information Systems*, San Francisco, California August 6th-9th 2009
- Chen, J., Hao, Y. (2009). Service System Decoupling for Mass Customization: A Case Study in Catering Services. *Journal of Service Science & Management*, 2009, 2: 255-264
- Chinn, S.J., Heiser, R., Suleiman, J. (2008). Emotional Responses to Computer-Based Training Materials in Education. In *Proceedings of the Fourteenth Americas Conference on Information Systems*, Toronto, ON, Canada August 14th-17th 2008
- Dong, J., Bai, X., Yin, W., Xie, M., Fasano, J.P., Li, T. (2009). iFAO: Facility Network Transformation Services for Specific Customer Oriented Service Industries. *Service Science* 1(1), pp. 63-76,
- Glushko, R.J. (2008). Designing a Service Science discipline with discipline. *IBM systems Journal*, 47, 1, 15-27
- Gutierrez, A., Mylonadis, C., Orozco, J., Serrano, A. (2008). Business-IS Alignment: Assessment Process to Align IT Projects With Business Strategy. In *Proceedings of the Fourteenth Americas Conference on Information Systems*, Toronto, ON, Canada August 14th-17th 2008
- Hidaka, K. (2006). Trends in Service Science in Japan and abroad. *Quarterly review*, 19
- IfM and IBM (2008). Succeeding through service innovation: A service perspective for education, research, business and government. www.ifm.eng.cam.ac.uk/ssme
- ISIC rev.4. (2008). <http://unstats.un.org/unsd/cr/registry/regcst.asp?Cl=27>
- Jaakkola E., Halinen, A. (2006). Problem solving within professional services: evidence from the medical field. *International Journal of Service Industry Management, IJSIM*, Vol.17, No.5
- Jiang, C., Chen, D. (2009). Research on Urban Logistics Infrastructure: An Empirical Study of China. *Journal of Service Science & Management*, 2009, 2: 80-91
- Larson, R.C. (2008). Service Science: At the intersection of management, social, and engineering sciences. *IBM Systems Journal*, Vol. 47, N.1
- Lin, D., Zhou, Z., Guo, X. (2009). A Study of the Website Performance of Travel Agencies Based on the EMICA Model. *Journal of Service Science & Management*, 2009, 3: 181-185
- Lovaas, P., Streff, K. (2009). A Comprehensive Information Technology Risk Assessment Audit Framework for Small- and Medium-Sized Financial Institutions”; *Proceedings of the Fourth Midwest United States Association for Information Systems Conference*, Madison, SD May 22-23, 2009
- Lubna Alam, S. (2008). To Wiki or to Blog: Piloting Social Software Technologies for Assessment in a Large First Year Information Systems Class. *19th Australasian Conference on Information Systems* 3-5 Dec 2008, Christchurch
- Lusch, R.F., Vargo, S.L. (2006). The service-dominant logic of marketing: dialog, debate, and directions.
- Lusch, R.F., Vargo, S.L. (2006). Service-dominant logic: reactions, reflections and refinements. *Marketing Theory*, Vol. 6, No. 3, 281-288
- Maglio, P., Spohrer, J. (2008). Fundamentals of Service Science. *Journal of the Academic Marketing Science* 36:18–20

- Meiller, Y., Bureau, S. (2009). Logistics Projects: How to Assess the Right System? The Case of RFID Solutions in Healthcare. Proceedings of the Fifteenth Americas Conference on Information Systems, San Francisco, California August 6th-9th 2009
- Mo, T., Wang, Z., Xu, X., Wang, X. (2009). A Virtualization-Based Service System Development Method. *Journal of Service Science & Management*, 2009, 2: 1-9
- Mogre, R., Gadh, R., Chattopadhyay, A. (2009). Using Survey Data to Design a RFID Centric Service System for Hospitals. *Service Science* 1(3), pp. 189-206,
- Mohamed S., Irani, Z. (2004). Validating Indirect Human Costs MEFM Taxonomy: Case Studies from the Banking Sector. In Proceedings of the Tenth Americas Conference on Information Systems, New York, New York, August 2004.
- Neely, A. (2007). The servitization of manufacturing, an analysis of global trends. In proceedings of the 14th European Operations Management Association Conference, Ankara, Turkey
- Pramatari, K., Theotokis, A., Doukidis, G. (2009). Consumer Acceptance of Technology Contact: Extending Web-Based eCommerce to Technology-Based Services. Thirtieth International Conference on Information Systems, Phoenix 2009
- Ramanathan, S., Alexander, M., Kerr, G. (2008). The IBM telecommunications service delivery platform. *IBM systems journal* Vol.47
- Raus, M. (2009). Value Assessment of Business-to-Government Innovations: a Case Study. 22nd Bled eConference, June 14 - 17, 2009, Bled, Slovenia
- Shao, J., Ma, T., Dong, S., Meng, X. (2009). Evaluation and Analysis: Development Trend of China's Logistics Industry under Supply Chain Globalization Environments. *Journal of Service Science & Management*, 2009, 2: 71-79
- Smits, M., Fairchild, A., Ribbers, P., Milis, K., VanGeel, E. (2009). Assessing Strategic Alignment to Improve IT Effectiveness. 22nd Bled eConference, June 14 - 17, 2009, Bled, Slovenia
- Spohrer, J., Vargo, S.L., Caswell, N., Maglio, P. (2008). The Service System is the Basic Abstraction of Service Science. In proceedings of 41st Hawaii International Conference on System Sciences
- Troboy, L., Batch, A., Bean, L. (2009). Information and Communication Technology Assessment Benchmark. Proceedings of the Fifteenth Americas Conference on Information Systems, San Francisco, California August 6th-9th 2009
- Wulf J., Hau, T., Zarnekow, R., Brenner, W. (2009). Specifying Enabling Services in Telecommunications Service Systems. Proceedings of the Fifteenth Americas Conference on Information Systems, San Francisco, California August 6th-9th 2009